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JANKI (JANMA KIOSK INTERFACE WITH MOBILE DEVICE)

(A Little Step Towards Digital India)

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ABSTRACT

Recent survey shows that death rate of pregnant woman in India is not under control. For the reason we are developing the project JANKI (Janma Kiosk Interface with Mobile Device) aims at providing critical Reproductive and Mother Health related information services to the pregnant and lactating women to their families and health workers in India. It is completed through mobile phones using localized voice SMSs in Hindi or any local languages. Two messages per week have been created for 40 weeks of pregnancy (norms as per the government programmes). Apart from more general, reinforcement messages on nutrition, specific messages pertaining to the week of pregnancy like post antenatal check-up; vaccines, iron folic supplements and movement of baby are sent to the registered women.

Keywords: Woman, Mother Project, Maternal Health, Healthcare.

I. INTRODUCTION

Every year, in India, about 30 million women experience pregnancy and 27 million have a live birth as per survey. Every eight minutes a mother dies in childbirth. The majority of these deaths are among women in the 15-29 age groups, at the prime of their reproductive lives. The most tragic aspect of these deaths is that about 90 percent of them are avoidable, if women receive the right kind of intervention. Intervention in terms of messages than we can reduce the death rate. India is one of the most mobile user country. Every citizen in India has mobile. As TRAI [1] provided good spectrum for mobile development companies. So large number of towers has been placed in almost all parts of India. Now a days there is no problem for network coverage. By keeping this point in mind Government of Maharashtra started one dept known as dept. of woman and child development.

The main vision of this dept is focus on first 1000 days i.e. 9 months to 24 months to improve nutrition of pregnant women and young children. Secondly the govt. started ARMMAN project which aims for risk to mother's life during child birth. When we surveyed all this dept. still no such project has been started by govt.

II. LITERATURE SURVEY

Mobile Alliance for Maternal Action (MAMA) [2] delivers vital health information via mobile phones to new and expectant mothers living in poverty in developing countries. Hosted by the United Nations Foundation, MAMA provides age and stage-based messages aligned with global best practices, empowering women to make the best decisions for themselves and their families. With an intentional focus on countries where high maternal and new-born mortality rates intersect with an increasing proliferation of mobile phones, MAMA directly assists programs in Bangladesh, South Africa and India. Additionally, it supports a growing community of approximately 300 organizations in over 70 countries who utilize our tools and information. By bringing together leaders from a cross section of industries MAMA harnesses the strengths and assets from the corporate, non-profit and government sectors.

There is a Primary Health Centre (PHC) [2] at the village at Belgaum, Karnataka. The PHC has a General Physician Doctor, Primary/Community Healthcare Workers and ASHA workers who work to provide basic medical care to the village population. Villagers come to the PHC for medical treatment. Healthcare Workers visit villagers' homes to collect basic health and medical data. There is a tie up with a Medical University which is 10 km from the PHC. The Medical University currently supports a video conferencing facility between the patients at the PHC and the Specialized Doctors at the Medical University Hospital. The solution proposes having a full edged Health Kiosk at the PHC. The health kiosk will act as a focal point of the service model. Along with the existing video conferencing facility the proposed health kiosk will have many more features to provide a comprehensive care. We plan to sync wireless/remote diagnostic devices with the health kiosk. The healthcare workers will be provided with a smartphone with a projector. Most of the villagers already have a basic mobile handset, one basic mobile handset per family.

-There are Specialized Doctors available at the Medical University Hospital situated at 10 km from the PHC. Common SMS to be sent to all types of diabetes patients: Diet Plans, Food Substitutes, Exercises, Blood Sugar Test Reminders, Tip of the day for healthy living with diabetes, others Customized SMS to be sent to various groups of diabetic patients (insulin dependent, oral medication dependant, pre-diabetic) like reminders for medication adherence.

-Frequency of SMS is dependent on the criticality and occurrence of the events. If unusually large number is detected for certain disease, for example communicable disease like malaria and dengue, we will leverage this setup to send a general precaution and awareness SMS to all the people in the village

-Ability to sync data with remote/wireless diagnostic devices

-Video conferencing facility

-Capture symptoms as photographs

-Maintain medical health records (also known as personal health records)

-Maintain database of patients

-Ability to create groups from patient records and send custom SMS

-Internet connectivity

-Ability to sync patient data with Mobile phone and remote diagnostic devices

Collaborating with health experts. For domain expertise in the design, de-elopement. And deployment of the system. Developing a. Web interface that provides women information and decision support advisories anytime, any-where. Reaching-out timely, personalized and vital information. In. Regional language (Marathi), related to pregnancy and child care, directly to the beneficiaries women or their family. Members creating awareness for the pregnant women and sensitizing the family members, indirectly help in reducing maternal mortality, Infant mortality and morbidity. Elective in alerting maximum number of target beneficiaries ciaries in short time.

Pregnant women in rural Ghana[2] are getting health information via mobile phone. The pilot project is part of an international initiative to employ mobile technology to improve the health of people in developing countries. There are many ways the mobile phones can be a tool for improving the health of the world's poorest segment. Norwegian researchers are playing a key role in making it happen. Collaborating with health experts for domain expertise in the design, development and deployment of the system. Developing a web interface that provides women information and decision support advisories anytime, any- where. Reaching-out timely, personalized and vital information in regional language (Marathi), related to pregnancy and child care, directly to the beneficiaries women or their family members Creating awareness for the pregnant women and sensitizing the family members, indirectly help in reducing maternal mortality, Infant mortality and morbidity. Elective in alerting maximum number of target beneficiaries in short time.

III. OBJECTIVES

1. Receiving Alerts on time:

A well-designed system automatically alerting about their arrivals. And allows most patients to check in at their own convenience

2. Signal Strength:

The system should have batter connectivity between the GSM phone and the kiosk. So Network on which system work should have good signal strength.

3. Voice Quality:

Voice mail quality is always a good factor, higher voice quality means good understanding of alerts to patients. And the voice quality should remain good between different languages.

IV. CHALLENGES AND JOURNEY AHEAD

Point of Care Technology (POCT) [3] refers to the ability to acquire clinical parameters where the patient is, thereby allowing faster results. It is evident that POCT only ensures quicker test results i.e. faster turnaround times (TAT). How the faster TATs are utilized by the healthcare delivery chain dictates the improvements in patient outcomes. Hence, it is must be emphasized that POCT by itself does not lead to better clinical outcomes. While technological advances pertaining to POCT, in the last two decades, have been impressive, its relevance in developing countries needs to be seen in the perspective of the available healthcare infrastructure of these countries. *[3]*

Mobile based system for providing maternal health related information directly to the pregnant and lactating women through voice call alerts in Marathi. Registered beneficiaries areas will receive customized, pre-

recorded health advices in Marathi, in their mobiles, i.e, what type of care to be taken in case of high risks during pregnancy, immunization remainders, child care, nutrition related and general information related to health services oriented by Government. Database being created through this project is very useful for the state government for identifying specific issues in that region and plan for special health care programs Considering the level of mobile penetration in India and literacy level among rural women, voice calls is the best model to reach-out the target beneficiaries directly and affordable[3]

4.1 Point of Care Technology

Geographically speaking, POCT can be delivered in various settings:

- Remote location
- Physicians' consulting office
- Hospital Based in Emergency Room, Operation Theatres, ICU.

POCT also can be used for:

- Therapeutic Aid: Treatment of diseases like diabetes, myocardial infarction.
- Preventive measures: Targeted screening in high risk groups. e.g., checking for diabetes in patients with positive family history
- Surveillance measures: Monitoring blood sugars, INR check after heart valve surgery, etc.

POCT in conjunction with EHR [3] (Electronic Health Record) has been shown to reduce mortality. Hence, POCT & EHR along with Telemedicine will go a long way in providing Healthcare to patients in remote locations.

V. CHANGE OF FLOW

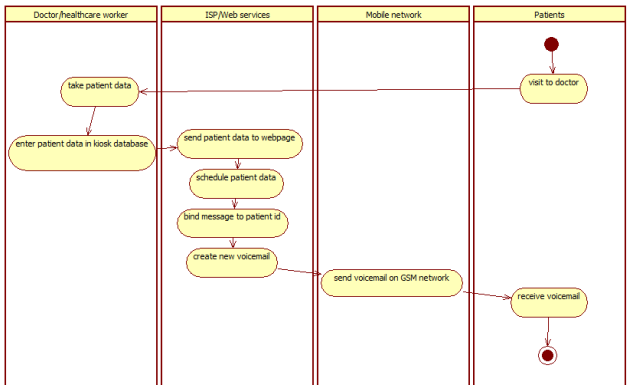

Figure 1: Activity diagram

5.1 Healthcare Delivery Chain

This comprises the numerous personnel/technologies involved in the delivery of healthcare. Traditionally healthcare involved direct contact between the physician and patient. [4]

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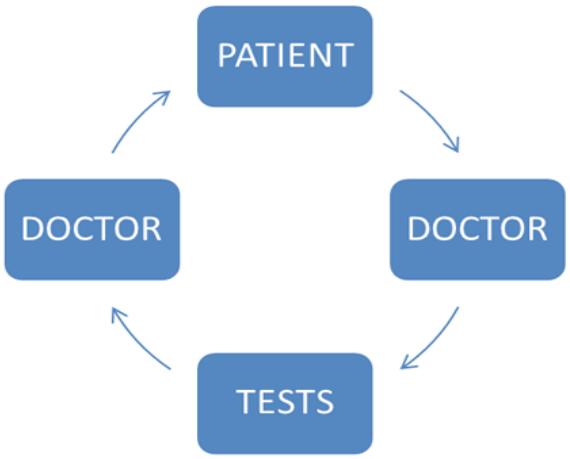

Figure 2: Traditional Healthcare

However with the advent of modern technology and POCT, quality healthcare can be delivered at rural/remote locations, too. [4]

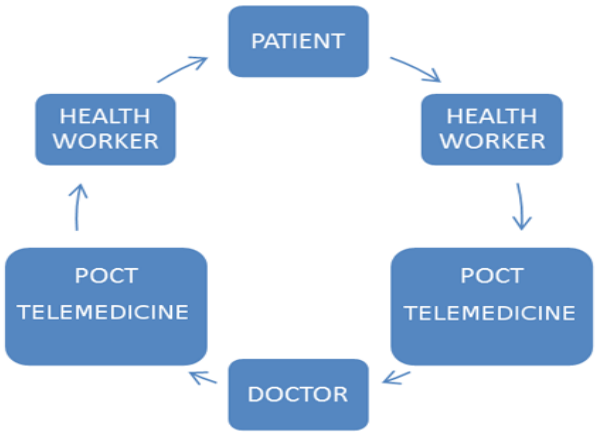

Figure 3: Modern Healthcare

5.2 Challenges in implementing POCT in India and Possible Solutions

• Patient factors

Literacy and Economic status: Often illiteracy compounds problems in healthcare delivery. This in combination with poverty remains the main [5] issue. "Universal Health Coverage by 2020" by the Government of India addresses this issue and projects are currently underway based on recommendations of the High Level Expert Group.

• Healthcare staff

where there are insufficient doctors, Community Health Workers (CHW) may be "empowered" to undertake some tasks i.e. Task Shifting. [7] They may be trained to perform minor procedures/POCT and report to a central unit manned by a physician. The acceptance of any procedure is usually better when vouched for by CHW. E.g. Maternal Health: CHW can visit antenatal patients of their villages and a small POCT kit - which measures Hemoglobin, urine dipstick for protein and an inexpensive electronic BP apparatus will go a long way in reducing MMR - which is still high in our country. [5]

• Infrastructure

In addition to the prevalent system of Subentries, Primary Health Centers, Community Health Centers and Hospitals, various small kiosks or booths can be set up with telemedicine facilities and networking capabilities to enable connection with doctors at central units. In the long run, these attempts would provide huge savings in terms of transportation costs avoided.

• Physician Factors

Physicians across the globe, in general, have been very slow and gradual in adoption of technology in their workflow. Reluctance to change existing practice, time-restraints, "unfriendly" software, software designed by non-medical experts and those not tailored to individual physician needs, are some of the main causes in the failure of universal adoption of technology by the medical fraternity. Physician motivations by incentive and disincentive schemes, demonstration of improved health care are steps that are urgently needed.

• Technology Factors

Currently, hospitals across the globe have their own EHR and HIS[3] (Hospital Information Systems). These systems, while they work very well as standalone products, seldom communicate with one another. This emphasizes the need for individual patient records which are cross-compatible across all platforms.

• Overwhelming Need for Data

There is a need for Indian Data - beyond the currently available crude demographic data. Burdens of Disease in India are largely estimates based on pilot studies and the accurate burden may be much higher. Accurate data allows accurate needs-assessment and this has an impact in budgeting for health care by the healthcare policy makers and also for allotting appropriate personnel. [6]

VI. CONCLUSION

While there have been significant improvements in health in our country, there is plenty more to be accomplished. The high penetration of mobile phone technology in our country (over 900 million mobile phone subscribers) can be used in promoting mHealth - by means of which POCT results may be transmitted using mobile phone technology. By the effort of our JANKI Project we can significantly improve mother immortality rate.

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